US Army Corps of Engineers®

Coastal Field Data Collection Program

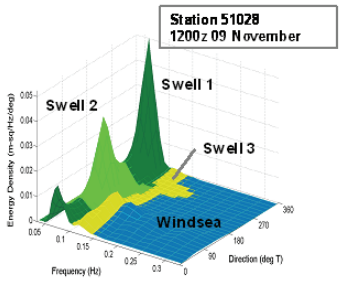
Wave Information Studies (WIS)

Issue

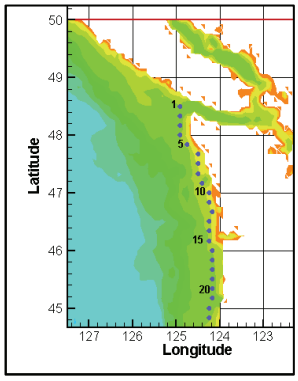
Knowledge of the climatology of the atmosphere and coastal waters is required for planning, design, construction, and maintenance of U.S. Army Corps of Engineers projects in the coastal zone. Such information is scarce due to the lack of measurements at coastal locations over time periods long enough to be statistically significant. This lack of information is a critical problem for Corps operations and projects near the coast. There exists a broad need in the Corps for a database of directional information sufficient to define the environmental climate in the coastal zone.

Research Approach

WIS uses proven numerical wave hindcast models with the best available input wind fields to produce output wave parameters and wave spectra for stations near the U.S. coast and territories for periods of 20 years or more. Hindcasted results are verified through comparison to all available measured data. New techniques of spectral comparisons have been developed to determine the accuracy of hindcasted directional wave spectra. WIS is utilizing a recently released multi-grid wave hindcast model for the Pacific regional hindcast. This model can handle three grid resolutions in a single run and allows energy to propagate in and out of each of the three grid boundaries. This model contains parallel computing techniques for efficient computations and a spectral partitioning technique developed at CHL.



Spectral



Pacific Regional Grid Section

Partners

Oceanweather, Inc.; NOAA; National Center for Environmental Prediction &Great Lakes Environmental Research Laboratory; Baird and Associates

Products

WIS Web site is available for transfer of wave parameter information for a dense network of U.S. coastal stations and deepwater stations. Atlantic, Gulf of Mexico, Pacific and Great Lakes hindcasted wave information is available in databases of 20 years and above. A new five-year Pacific regional hindcast is currently being analyzed. The Web site includes descriptions of information, and a user can download, plot or analyze information with summary tables or rose diagrams. New products related to storm climates and station visualization are being added to enhance the Web site. Documentation, references and papers related to the WIS hindcasts are also available on-line. Wave spectra is available from the WIS staff. http://frf.usace.army.mil/cgi-bin/wis

Point of Contact

Barbara A. Tracy, Barbara.A.Tracy@usace.army.mil, 601-634-2400, ERDC-CHL, Vicksburg, MS.